

# NEW PLANT RECORDS FOR DOMINICA, LESSER ANTILLES

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## ABSTRACT

Twenty-six vascular plant species are reported here for the flora of Dominica, in the Lesser Antilles. These include two pteridophytes, 13 monocotyledons, and 11 dicotyledons. Four of these species are reported as new to the Lesser Antilles: *Marsilea polycarpa* Hook. & Grev., *Diplazium capitatum* (Willd.) Boeck., *Rhynchospora racemosa* Wright ex Sauvalle, and *Pharus lappulaceus* Aubl.

## RESUMEN

Se citan 26 plantas vasculares adicionales para la flora de Dominica en las Antillas Menores. Estas especies incluyen dos pteridófitos, 13 monocotiledóneas y 11 dicotiledóneas. Cuatro de estas especies se presentan como nuevas para la flora de las Antillas Menores: *Marsilea polycarpa* Hook. & Grev., *Diplazium capitatum* (Willd.) Boeck., *Rhynchospora racemosa* Wright ex Sauvalle, y *Pharus lappulaceus* Aubl.

## INTRODUCTION

Dominica is a volcanic island located between the French islands of Guadeloupe and Martinique in the Lesser Antilles. It is about 45 km long and 24 km wide. While it is a small island (1088 sq. km), it presents a diversity of habitats along altitudinal and moisture gradients because of its rugged mountainous topography. Several of the mountain peaks exceed 1200 m (Morne Diablotins 1433 m, Morne Trois Pitons 1402 m, Morne Watt 1242 m, Morne Anglais 1223 m). Water is abundant on the upper slopes of the mountains (e.g. at Freshwater Lake, 8459 mm of rain/yr. has been recorded) but rainfall on the western (Caribbean) coast is severely restricted by a rain shadow (< 2000 mm/yr.) and a dry scrub forest prevails. Severe damage caused by hurricanes and agriculture has also provided opportunities for opportunistic species, increasing the diversity. The coastline is very steep, and the

cliffs generally continue precipitously into the ocean. Level land is primarily restricted to river deltas in a few narrow bands near the coast, where most citizens live.

Botanically, Dominica is rather well-known. The dicotyledonous flora was treated by Nicolson (1991) who estimated a vascular flora of 1226 species. The most recent treatment of its pteridophytes and monocots was Howard's six volume *Flora of the Lesser Antilles* (1974, 1977, 1979, 1988, 1989a, 1989b) which included detailed distribution notes within that region, and treated the dicots as well. Whitefoord (1989) added 40 phanerogams and six ferns to the flora. This paper reports twenty-six vascular plant species newly discovered and vouchered for Dominica.

#### METHODS

The plants reported here as new to Dominica were discovered during the period 1990–1997. Approximately 2000 collections were made by the first author for the purpose of assembling a reference herbarium at the Springfield Estate, formerly called the Archbold Tropical Research Center after the late John Archbold who donated the property to Clemson University in 1989. The Springfield Estate is currently leased from Clemson University by a Dominican non-government organization, the Springfield Centre for Environmental Protection, Research, and Education (SCEPTRE). The herbarium there has been informally designated with the acronym "atrc." Specimens donated by several other collectors have also been incorporated into the herbarium.

Collections (2005 numbers) have been made on Dominica during eight visits to the island by Hill as follows: 20 March–26 March 1990 (collection numbers 21230–21379), 4 March–23 March 1991 (22009–22179), 26 July–5 August 1992 (23924–24171), 5 March–16 March 1993 (24612–24847, w/J. Gable & B. Dorsey), 7 December–19 December 1993 (25309–25563, w/I. Renne & D. Bradshaw), 28 May–6 June 1994 (25610–25872), 24 May–9 June 1996 (27861–28262), and 23 February 1997–14 March 1997 (28868–29109, w/L.R. Phillippe). Sets of specimens have been deposited primarily in the Dominican herbarium (atrc), Clemson University (CLEMS), the Illinois Natural History Survey (ILHS), and the Smithsonian Institution (US). Additional duplicates have been distributed to herbaria cited after the individual specimens.

New records of species generally considered to be indigenous to the Lesser Antilles (according to Howard 1974, 1977, 1979, 1988, 1989a, 1989b) are reported here. Some may have actually been introduced to Dominica by human activities, but direct evidence is lacking.

## ANNOTATED PLANT LIST

## PTERIDOPHYTES

## HYMENOPHYLLACEAE

*Trichomanes crinitum* Sw. An epiphyte similar to *Trichomanes crispum* L. but differing in its lobed or pinnatifid, not entire, pinnae. Its general distribution is northern South America to Jamaica, and it has been reported from Guadeloupe, St. Vincent, and Grenada in the Lesser Antilles. We thank A.R. Smith for the identification.

**St. George Parish:** elfin forest on windswept ridge between Breakfast River and Valley of Desolation, 6 Mar 1997, *Hill & Phillippe* 29070, (atrc, ILLS, UC).

## MARSILEACEAE

*Marsilea polycarpa* Hook. & Grev. A trailing perennial of temporary ponds, this species of northern South America has not been previously reported in the Lesser Antilles. It has several globose sporocarps arranged and attached in a linear fashion on the frond stipes rather than the single basal sporocarp seen in most other species of the genus. Neither the genus nor family have been previously reported from Dominica.

**St. Andrew Parish:** locally abundant in and around temporary ponds at E end of Melville Hall Airport, Londonderry Bay, 23 Feb 1997, *Hill & Phillippe* 28868 (atrc, BRIT, ILLS, MO, NY, UC, VT).

## FLOWERING PLANTS

## LILIOPSIDA

## AGAVACEAE

*Agave dussiana* Trel. The century plants are seldom collected, and none were reported from Dominica by Howard (1979). This species, which is endemic to the Lesser Antilles, is very conspicuous in the dry scrub on the dry rocky hills of the NW coast of Dominica in areas of very low rainfall, growing mostly with cacti. Previous collections are known from St. Barts, Antigua, Montserrat, Guadeloupe, and Martinique.

**St. Joseph Parish:** Morne Raquette (Rachette), Au Piton Road, 18 Dec 1993, *Hill* 25524 (atrc, NY). **St. Peter Parish:** Clement James' property, Anse à Liane trail to coast, 0.9 km N of Colihaut, 2 Mar 1997, *Hill & Phillippe* 28988 (atrc, BRIT, ILLS, MO, NY, TAES, USE, VT).

## CYPERACEAE

*Diplacrum capitatum* (Willd.) Boeck. This species is rather common in Venezuela and ranges from Panama to Bolivia as well. This appears to be the first record from the Lesser Antilles. Howard (1979) listed only *Diplacrum longifolium* (Griseb.) C.B. Clarke ex Dur. & Schinz. for the Lesser Antilles, from St. Paul Parish, Dominica. We thank M. Strong for the identification.

St. Joseph Parish: Imperial Highway, Central Forest Reserve, Dleu Gommier area, 6 Jun 1994, *Hill* 25864 (atrc, NY, US, USF).

*Fimbristylis cymosa* R. Br. subsp. *spathacea* (Roth) T. Koyama. This is a characteristic, wiry-leaved and tough-rooted, sedge of the windswept flats of the E and NE coasts of Dominica. Pantropical in distribution, it has been collected previously on most of the Lesser Antilles, including Guadeloupe and Martinique.

St. Andrew Parish: roadside 0.5 mi N of Melville Hall Airport, Londonderry Estate, 16 Mar 1993, *Hill* 24842 (atrc, CLEMS, MO, NY, TAES, USF).

*Rhynchospora racemosa* Wright ex Sauvalle. This is the first report of this species for the Lesser Antilles. It is relatively common in the Greater Antilles. We thank M. Strong for the identification.

St. Peter Parish: Morne Espagnol, from Coastal Highway to summit, 4 Aug 1992, *Hill* 24149 (CLEMS, NY).

### ORCHIDACEAE

*Brachionidium parvum* Cogn. This tiny epiphyte of the upper montane rainforests was previously known from Venezuela and from Guadeloupe, Martinique, and Grenada in the Lesser Antilles. It was to be expected in Dominica but probably has been overlooked because of its small size (< 5 cm tall). We thank D. Nicolson for the identification.

St. Peter Parish: NW side of Morne Diablotins peak, elfin forest, 6 Mar 1993, *Hill* 24647 (atrc, CLEMS). St. George Parish: Laudat, ca. 1 km W of Titou Gorge, 4 Jun 1996, *Hill* 28177 (atrc, ILLS, USF).

### POACEAE

*Ichnanthus nemorosus* (Sw.) Doell. var. *stuartzii* K.E. Rogers. Generally distributed in the Antilles and Trinidad, this trailing rainforest species has been collected previously on St. Kitts, Nevis, Montserrat, Martinique, St. Vincent, and Grenada in the Lesser Antilles.

St. George Parish: Morne Anglais trail to summit, S of Giraudel, 2 Jun 1996, *Hill* 28124 (atrc, ILLS).

*Isachne angustifolia* Nash. This thicket-forming grass which often climbs over other plants has been known previously from Puerto Rico, and from Guadeloupe, Martinique and St. Kitts in the Lesser Antilles. The new record is an expected range extension. We thank G. Davidse for the identification.

St. George Parish: Morne Anglais trail at summit, S of Giraudel, 2 Jun 1996, *Hill* 28077 (atrc, ILLS, TAES).

*Isachne arundinacea* (Sw.) Griseb. This is another clambering grass of exposed wet mountain slopes, and its general range is Jamaica to Trinidad S to Bolivia and N to Mexico. In the Lesser Antilles it has been previously collected on St. Kitts, Guadeloupe, and Grenada. We thank G. Davidse for the identification.

**St. Paul Parish:** trail to summit of Morne Trois Pitons, N side, just NE of Pont Cassé, 9 Dec 1993, *Hill* 25340 (atrc, MO, VT).

*Leptochloa virgata* (L.) Beauv. A very widely distributed grass which ranges from the southern United States through the Caribbean and Central America to South America. It has been collected on many of the Lesser Antilles, including nearby Marie Galante and Martinique, and was to be expected on Dominica.

**St. Peter Parish:** Clement James' property, Anse à Liane trail to coast, 0.9 km N of Colihaut, 26 Feb 1997, *Hill & Phillippe* 28962 (atrc, ILLS, MO, TAES).

*Pharus lappulaceus* Aubl. This wide-ranging, wide-leaved grass is found in forests from the Caribbean and Central America to southern South America. Howard (1979) noted the similar *P. glaber* Kunth from Dominica. We thank T.S. Filgueiras for the identification.

**St. Mark Parish:** Petit Coulibri, Morne Fous, 15 Mar 1993, *Hill* 24796 (atrc, CLEMS).

*Phragmites australis* (Cav.) Trin. ex Steud. Probably due to the general lack of suitable habitat, the common reed has not previously been collected on Dominica. Otherwise, it is widespread in both tropical and temperate portions of the world, and has been collected previously in the Lesser Antilles on Guadeloupe, Martinique, and St. Lucia.

**St. John Parish:** marsh at N side of Coconut Beach Hotel, Prince Rupert Bay, Portsmouth, 29 May 1996, *Hill* 27993 (atrc, ILLS).

*Spartina patens* (Ait.) Muhl. This grass, usually found in salt marshes and flats along the coast, was a surprising find in Dominica where these habitats are essentially lacking. The species generally ranges from the E coast of North America from Quebec to Mexico, Central America, and the Caribbean. In the Lesser Antilles it has been collected previously on St. Martin, Antigua, and Guadeloupe. We thank D. Nicolson for the identification.

**St. Andrew Parish:** just N of the mouth of the Londonderry (Tweed) River, Londonderry Estate, coastal rock ledges, 14 Dec 1993, *Hill & James* 25475A (atrc, VT).

*Urochloa plantaginea* (Link) Webster. Often reported as *Brachiaria plantaginea* (Link) Hitchc., this grass of unstable areas ranges widely from Mexico and the Caribbean to Brazil and Bolivia. As with *Phragmites*, it may be a recent introduction, though Dominica falls within its general range. It has been previously collected in the Lesser Antilles only on St. Lucia. We thank T.S. Filgueiras for the identification.

**St. Paul Parish:** Morne Daniel Road, Canefield, 10 Mar 1993, 24701 (atrc, CLEMS).

## MAGNOLIOPSIDA

### COMBRETACEAE

*Conocarpus erecta* L. The button mangrove (buttonwood) is widely distributed in the American tropics along the coasts of Florida, USA, S through

Mexico and Central America to the Caribbean and tropical South America and it has also been collected in West Africa. Buttonwood has been found on nearly all of the other Lesser Antilles. Hodge (1964) noted: "the common genera of mangrove (*Rhizophora*, *Avicennia*, *Laguncularia*, and *Conocarpus*) are absent from Dominica, a fact easily accounted for by the lack of sufficient lowland sites on an island where the coastline is very precipitous." Diligent searching by Arlington James and other members of the Division of Forestry and Wildlife have resulted in the verification of the occurrence on Dominica of three of these genera, two of which (*Avicennia* and *Conocarpus*) are reported here as new. Of the four genera listed by Hodge, only *Rhizophora* has not yet been found on Dominica. *Laguncularia* was reported by Nicolson (1991). Only one individual of *Conocarpus* has been found.

St. Andrew Parish: Ballyboo Beach, Baribou Bay, Hampstead, 14 Dec 1993, *Hill & James* 25454. (atrc, CLEMS).

### CONVOLVULACEAE

*Convolvulus nodiflorus* Desr. This species is widespread in dry scrub in the West Indies, Central and South America. It has previously been collected on the majority of the Lesser Antilles, including nearby Guadeloupe and Martinique, and was to be expected on Dominica. We thank D. Nicolson for the identification.

St. Joseph Parish: Morne Raquette (Rachette), Au Piton Road, 18 Dec 1993, *Hill* 25526 (atrc, GH, MO, NY, US, USA). St. Peter Parish: S of Morne Espagnol between Bioche and Colihaut, coastal highway, 7 Jun 1996, *Hill* 28248 (atrc, MO, US).

### EUPHORBIACEAE

*Euphorbia balbisii* Boiss. A species endemic to the Lesser Antilles, also known as *Chamaesyce balbisii* (Boiss.) Millsp., *E. balbisii* was previously known only from Barbuda, Antigua, Guadeloupe, and La Désirade. It is a prostrate species of wind-swept salt-sprayed coastal cliffs in Dominica.

St. Andrew Parish: Woodford Hill Estate, just E of Pte. La Soie E of an old quarry, 14 Dec 1993, *Hill & James* 25464 (atrc, NY).

### FABACEAE

*Dalbergia monetaria* L.f. Generally distributed from Jamaica to tropical South America, Howard (1988) reported that the species previously had been collected in Guadeloupe, Martinique, and St. Vincent. Vélez (1957) reported this species as present on Dominica, but Nicolson (1991) dismissed this as a misidentification. Differing from *D. ecastaphyllum* (L.) Taubert (which is common on Dominica and has unifoliolate leaves) by its pinnately compound leaves (3–5 leaflets), it is rather common locally along the banks of the Indian river. The identification was confirmed by V. Rudd (SFV).

St. John Parish: Indian River banks, Portsmouth, 5 Mar 1997, *Hill & Phillippe* 29056 (atrc, BRIT, ILLS, MO, NY, US, USA, VT).

**MALVACEAE**

*Sida jamaicensis* L. This wide-ranging species is known from Mexico, the Caribbean, Central America, and northern South America. In the Lesser Antilles it has previously been collected on St. Barts, Antigua, Montserrat, Guadeloupe, and Les Saintes in the dry scrub forests. We thank Paul Fryxell for the identification.

St. Joseph Parish: Morne Raquette (Rachette), Au Piton Road, 4 Jun 1994, *Hill 25808* (atrc, NY, TEX, USF).

**NYMPHAEACEAE**

*Nymphaea amazonum* C. Mart. & Zucc. This night-flowering water lily ranges throughout the Caribbean and from Mexico to southern Brazil. It previously has been collected in Guadeloupe, Marie Galante, Martinique and St. Lucia in the Lesser Antilles. Suitable habitat for the species is very scarce on the island. We thank J. Wiersema for the identification.

St. Andrew Parish: roadside 0.5 mi N of Melville Hall Airport, Londonderry Estate, 16 Mar 1993, *Hill 24844* (atrc, CLEMS).

**OLEACEAE**

*Forestiera segregata* (Jacq.) Krug & Urb. Another new discovery in the dry scrub forests of western Dominica, this species ranges from the coastal SE USA, S to the Lesser Antilles. It has been collected previously on Anguilla, Barbuda, Antigua, La Désirade, and Marie Galante in the Lesser Antilles. We thank A. Goldberg and D. Nicolson (US) for the determination.

St. Joseph Parish: Morne Raquette (Rachette), Au Piton Road, 18 Dec 1993, *Hill 25550* (atrc, GH, NY, US).

**RUBIACEAE**

*Randia nitida* (H.B.K.) DC. This spiny coastal shrub is distributed from Mexico to South America and the Caribbean. In the Lesser Antilles it has been reported from Martinique, St. Lucia, St. Vincent, and Grenada. It is distinguished from the more frequent *R. aculeata* L. by its flower size (3–3.8 cm vs. 2 cm long in *R. aculeata*) and fruit size (3.2–5 cm vs. 1–1.2 cm long in *R. aculeata*). We thank D. Nicolson (US) for the identification.

St. Paul Parish: Rodney's Rock on the coast, Hertford Estate, 13 Dec 1993, *Hill 25425* (atrc).

**RUTACEAE**

*Pilocarpus racemosus* Vahl. This Caribbean endemic ranges from Cuba to the Lesser Antilles. It has been collected previously on Montserrat, Guadeloupe, and Martinique in the Lesser Antilles and was to be expected on Dominica. It is restricted to windswept coastal forests and is associated with the palm *Rhyticocos* on the N coast of Dominica. We thank D. Nicolson for the identification.

**St. Andrew Parish:** cliffs at W side of Ballyboo Beach, Batibou Bay, Hampstead, 16 Mar 1993, *Hill* 24823 (atrc, CLEMS, NY, TAES, US, USF); same locality, 14 Dec 1993, *Hill & James* 25453 (CLEMS).

## VERBENACEAE

*Avicennia germinans* (L.) L. The black mangrove was a particularly interesting find on Dominica. While it was thought to be absent by previous authors (see comments under *Conocarpus*, above) it was located by the second author in recent years at several places, the most unusual one in elevated cliffside sedge-dominated seeps on the NE coast of the island. Other populations are restricted to a few square meters of level land at the mouth of small rivers. Like *Conocarpus*, *Avicennia* is widely distributed along coasts from Florida and Texas, USA, to northern South America. It has been found on nearly all of the other Lesser Antilles.

**St. David Parish:** mouth of the Ouayaperi River, Corossol Beach, 0.6 km N of La Plaine, 12 Dec 1993, *Hill* 25390 (atrc, CLEMS, BRIT, ILLS, MO, NY, US, USF, VT). **St. Andrew Parish:** Woodford Hill Estate, just E of Pte. La Soie E of an old quarry in sedge seeps, 14 Dec 1993, *Hill & James* 25469 (atrc); mouth of Eden River, Eden Estate, S of Crompton Point, 14 Dec 1993, *Hill & James* 25473 (atrc, GH, NY, US, USF).

## VITACEAE

*Cissus obovata* M. Vahl. A vine endemic to the Caribbean, *C. obovata* is easily distinguished from the more common *C. verticillata* (L.) Nicolson & Jarvis by its trifoliolate rather than simple leaves. It ranges from Cuba, S to the northern Lesser Antilles. Collections previously have been made in the Lesser Antilles on St. Martin, St. Barts, and Barbuda.

**St. George Parish:** head of trail to Trafalgar Falls, Trafalgar E of hydroelectric facility, 25 May 1996, *Hill* 27871 (atrc).

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